

Attitude, Subjective Norms, and The Adoption of Green Transportation Modes among Generation Z's Willingness to Travel to Kuala Lumpur

Siti Hajar Ibrahim¹, Siti Yuliandi Ahmad^{2*}, Susan Hama³

^{1,2}Department of Tourism, Kulliyah of Sustainable Tourism and Contemporary Languages, International Islamic University Malaysia, ³Faculty of Management Sciences, Yala Rajabhat University, Thailand

¹ibrahimhajar90@gmail.com

²sitiyuliandi@iium.edu.my

³susan.h@yru.ac.th

*Corresponding author: sitiyuliandi@iium.edu.my

ABSTRACT

As climate change and environmental sustainability gain increasing global attention, the transportation sector, particularly in urban areas, is identified as a significant contributor to greenhouse gas emissions. Adoption of public transportation by tourists remains low, and current strategies often fail to meet tourists' needs and preferences, leading to suboptimal sustainable travel behaviours. This study investigates the adoption of green transportation modes among Generation Z tourists travelling to Kuala Lumpur, focusing on urban public transportation services, including buses, Light Rail Transit (LRT), Mass Rapid Transit (MRT), monorail, and commuter trains. Using the Theory of Planned Behaviour (TPB) as a theoretical framework, this research investigates the attitudes, subjective norms, and public transport adoption among Generation Z. A quantitative research method was employed, with data collected via self-administered questionnaires and analysed using IBM SPSS version 29. By understanding the behavioural drivers of green transportation adoption, this research contributes to developing strategies that enhance the attractiveness and efficiency of public transportation, ultimately reducing the environmental impact of tourism in Kuala Lumpur.

Keywords: Attitude; Adoption of Green Transportation, Subjective Norm

Article Classification: Research Paper

1. INTRODUCTION

Climate change is a global issue with profound implications for tourism, as food, shopping, and transportation all contribute to environmental impacts (Leal Filho et al., 2022). Among these modes of transportation, particularly air travel is the largest contributor to the tourism carbon footprint, accounting for over 50% of total emissions in various regions (Rosalina et al., 2023). The tourism sector, historically one of the fastest-growing industries, has significantly contributed to CO₂ emissions, leading to environmental degradation, climate abnormalities, and disruptions to ecosystems and communities (Pandit & Sharma, 2023).

Sustainable and green transportation offers a potential solution, utilising renewable energy sources and reducing dependency on fossil fuels. Environmentally friendly transportation options include walking, cycling, carpooling, electric vehicles, and public transport such as LRT, MRT, and buses (Fuelberth, 2023). These alternatives enhance energy efficiency, lower carbon emissions, and promote a cleaner urban environment (Hamim & Jalil, 2024).

Sustainable and green transportation offers a potential solution, utilising renewable energy sources and reducing dependency on fossil fuels. Environmentally friendly transportation options include walking, cycling, carpooling, electric vehicles, and public transport such as LRT, MRT, and buses (Fuelberth, 2023). These alternatives enhance energy efficiency, lower carbon emissions, and promote a cleaner urban environment (Hamim & Jalil, 2024).

However, despite the availability of green transportation options, many tourists, including Generation Z travellers, still prefer private vehicles due to convenience and flexibility. A lack of awareness and perceived inconvenience also contribute to the low adoption of public transport among this group (Deden Irawan et al., 2024). Understanding the factors influencing Gen Z tourists' attitudes toward green transportation is essential for increasing its adoption, ultimately supporting Kuala Lumpur's sustainable tourism goals.

2. LITERATURE REVIEW

The Theory of Planned Behaviour (TPB), developed by Ajzen (1980s), serves as the theoretical foundation for this study, explaining how attitudes, subjective norms, and perceived behavioural control shape individuals' intentions to adopt green transportation modes (La Barbera & Ajzen, 2021). TPB has been widely applied across various fields,

including tourism and sustainable transportation, to predict behavioural intentions (Yang et al., 2023).

2.1 Attitude, Subjective Norms, and Green Transportation

Attitudes refer to an individual's overall evaluation of a behaviour, which significantly influences their behavioural intentions (Hidayati & Destiana, 2023). Studies show that favourable attitudes toward eco-friendly transportation strongly correlate with adoption intentions (Zhang et al., 2021). Green transportation, such as public transit, electric vehicles, and bike-sharing, is often evaluated using a semantic differential scale to measure perceived benefits and drawbacks (Fishbein & Ajzen, 1975). Subjective norms represent the perceived social pressures from important individuals, such as family, friends, and society, influencing behavior (Listiawati et al., 2024). Research suggests that social influences, including peer encouragement and environmental awareness campaigns, enhance tourists' likelihood of adopting green transportation (Khajehshahkoochi et al., 2021). However, while subjective norms affect decision-making, factors like cost and convenience also play a role (Imelda & Rofi'i, 2022). Adoption of green transportation modes is influenced by attitudes, subjective norms, and perceived behavioural control (Mohammad et al., 2024). Studies highlight that personality traits, environmental awareness, and technological advancements also impact adoption rates (Shetty & Rizwana, 2024). Furthermore, subjective norms can moderate perceived risks, with strong social support reducing concerns about adopting new transport technologies (J, 2023).

The relationship between attitudes, subjective norms, and green transportation adoption is well-documented in existing literature. Positive attitudes, social influences, and supportive infrastructure collectively increase the likelihood of adoption (Nogueira et al., 2023). Additionally, strategic policies and public campaigns promoting green mobility can shift societal norms, encouraging sustainable travel behaviours (Li et al., 2021). This study seeks to further explore these determinants among Generation Z tourists in Kuala Lumpur to enhance green transportation adoption.

3. METHODOLOGY

This study employs a quantitative research approach using structured questionnaires to collect data from Generation Z visitors who use green transportation in Kuala Lumpur. In quantitative research, data collection involves systematically gathering numerical data to analyse relationships between variables through statistical methods (Francois, 2022). Quantitative research enables systematic data collection, measurement, and analysis to gain a deeper understanding of social issues (Dev, 2024). Plugge and Shahrokh Nikou (2024) highlights its accuracy and flexibility, making it ideal for exploring the factors influencing the adoption of eco-friendly transportation among Generation Z travellers. To ensure accuracy and reliability, this study conducts pre-tests and pilot testing before distributing the questionnaire. Primary data is collected directly from respondents, ensuring relevance and quality (Xiayahu, 2023). As unprocessed data, it allows for flexible analysis (Proessdorf et al., 2023) and is tailored to the study's objectives (Li, 2022). IBM SPSS 29 is used for data analysis, with results presented through descriptive analysis and inferential analysis.

4. FINDINGS AND DISCUSSION

This chapter examines the data collected from a questionnaire distributed to Generation Z tourists, aged between 12 and 27, who are travelling to Kuala Lumpur. The data were analysed using IBM SPSS Statistics and presented using descriptive and inferential analysis. This chapter is essential to the study as it provides a detailed description of the questionnaire-derived data.

4.1 Descriptive Analysis of All Variables

Objective 1 is to determine the attitude, subjective norm, and adoption of green transportation modes in relation to Generation Z's willingness to travel to Kuala Lumpur. Table 1 indicates the mean values of all variables in this study, ranging from 3.84 to 3.95. Correspondingly, adoption of green transportation modes attributes the highest mean score, which is 3.952, with a standard deviation of 1.681. It was then followed by attitude variables with a mean score of 3.929 and a standard deviation of 1.585. The subjective norm has the lowest mean score, which is 3.845, with a standard deviation of 1.712. These results suggest that Generation Z respondents generally have a positive perception of using Green Transportation Modes.

Table 1. Descriptive Analysis of All Variables

Variables	Mean Score	Standard Deviation
Attitudes	3.929	1.585
Subjective Norms	3.845	1.712
Adoption of Green Transportation Modes	3.952	1.681

These findings are aligned with studies of Farliana et al. (2024), which demonstrated that attitudes play a critical role in influencing sustainable travel behaviour. The positive attitude scores in this study reflect the growing environmental awareness among younger generations. This is consistent with findings by Santi et al. (2024), who observed that Generation Z demonstrated a high awareness of environmental issues since they actively seek eco-friendly products and practices in their consumption behaviour.

In contrast, other studies have identified subjective norms as the most significant predictor in sustainable travel behaviour. For instance, Giubergia et al. (2024) found that subjective norms, both descriptive and injunctive, play an important role in shaping transportation choices. The studies showed that normative messages can effectively encourage shifts from using a car to using public transportation, especially when individuals perceive a higher level of behavioural control.

The high mean score for the adoption of green transportation modes suggests a positive trend in the willingness to adopt sustainable practices. This is in line with Altsybeeva et al. (2023), who reported that the enhancement, convenience, and environmental benefits make public transport more attractive to the youth, potentially reducing reliance on personal vehicles. The findings indicate that all variables are of high value in terms of mean, addressing research Question 1 to determine the attitude, subjective norm, and adoption of green transportation modes among Generation Z's willingness to travel to Kuala Lumpur.

4.2 Multiple Regression Analysis

To determine the relationship between factors influencing the adoption of green transportation modes among Generation Z, multiple linear regression was used. The

substantial R value of 0.971 indicates a strong correlation between the independent variable and dependent variable. The corresponding R Square value in Table 2 showed 0.943, which signifies that the model explains a noteworthy 94.3% of the variance in the adoption of green transportation modes. This percentage reflects the combined influence of attitudes and subjective norms. Overall, these results suggest a well-fitting model that explains a significant proportion of the variability in the adoption of green transportation modes based on the selected predictors. The high R Square value underscores that these two factors play an important role in shaping Generation Z's willingness to adopt sustainable travel options in Kuala Lumpur.

Table 2. Strongest Predictor of all variables

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.971	0.943	.942	2.32014

- a. Predictors: Attitudes, Subjective Norms
- b. Dependent Variable: Adoption of Green Transportation Modes

The ANOVA output table 3 shows that the F-ratio is 1779.944, indicating that the regression analysis was statistically significant overall. Besides, it is important to examine the p-value to determine whether the regression model effectively determines the relationship between the adoption of green transportation modes, the dependent variables, and the other two independent variables, attitudes, and subjective norms. Based on the table above, the results indicate that the regression model is a strong fit, with attitudes and subjective norms significantly explaining the variability of green transportation modes among Generation Z. The Sig. (p) value results in <.001, which is less than 0.05. Thus, this indicated a significant linear regression between the dependent variables, which were the adoption of green transportation modes, and the independent variables: attitudes and subjective norms.

These findings align with the Theory of Planned Behaviour, suggesting that attitudes and subjective norms are key drivers of sustainable behaviour. It highlights the importance of designing interventions that address both individual and social factors to encourage green transportation adoption among young travellers.

Table 3. Anova Table

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	19163.043	2	9581.521	1779.944	<.001
	Residual	1162.738	216	5.383		
	Total	20325.781	218			

Dependent: Adoption of Green Transportation Modes

Predictors: (constant), Attitudes, Subjective Norms

The coefficient output results show the highest contribution to the dependent variables (adoption of green transportation modes). Table 4 demonstrates the results of the coefficients between two attributes. The first hypothesis suggests a significant relationship between attitude and the adoption of green transportation modes among Generation Z, particularly concerning their willingness to travel to Kuala Lumpur. Findings show that attitude significantly influences the adoption of green transportation modes to travel to Kuala Lumpur, where the P-value is <.001 ($B = 0.526$, $p < 0.05$), with a standardised coefficient ($B = 0.368$). Kwak (2023) stated that the variable is significant when the P-value is less than 0.05, and as a result, H1 is supported.

Table 4. Beta Coefficient Table

Model		Unstandardized Coefficients		Standardized Coefficients Beta	t	Sig.
		B	Std.Error			
1	(Constant)	0.371	0.569		0.652	0.515
	Attitude	0.368	0.053	0.526	6.943	<0.001

	Subjective Norms	0.329	0.055	0.451	5.953	<0.001
--	------------------	-------	-------	-------	-------	--------

a. Dependent Variable: Adoption of Green Transportation Modes

The second hypothesis proposed that there is a significant relationship between subjective norms and the adoption of green transportation modes among Generation Z, as well as their willingness to travel to Kuala Lumpur. Findings show that subjective norms significantly influence the adoption of green transportation modes, where the P-value is <0.001 ($B = 0.451$, $p < 0.05$). The standardised coefficient ($B = 0.451$) suggests that subjective norms have a slightly smaller impact compared to attitude. All of the data confirm the significance of this relationship, supporting H2 and demonstrating the importance of social pressures and expectations in influencing sustainable travel behaviour.

In conclusion, both attitudes and subjective norm attributes significantly influence Generation Z's willingness to adopt green transportation modes when travelling to Kuala Lumpur. However, in terms of predictive strength, attitude has a slightly greater impact than subjective norms. Ultimately, this answered Research Objective 3, which aims to identify the strongest predictor of the relationship between attitudes and subjective norms in explaining the variance in the adoption of green transportation modes among Generation Z's willingness to travel to Kuala Lumpur.

5. CONCLUSION AND IMPLICATIONS

This study contributes to theory, practice, and policy by enhancing the understanding of green transportation adoption among Generation Z tourists in Kuala Lumpur. Theoretically, it reinforces the TPB by demonstrating the significant role of attitudes and subjective norms in influencing sustainable travel behaviour. In practice, the findings highlight the importance of improving infrastructure, ensuring reliable schedules, and addressing accessibility gaps to encourage the use of green transportation. For policymakers, the study suggests implementing incentives such as subsidies or discounts for low-carbon travel options, which can promote sustainable behaviours and support broader environmental goals.

Several practical recommendations emerge from this study to promote the adoption of green transportation. Urban planners and transportation authorities should focus on expanding public transport networks, reducing waiting times, and increasing service frequency, particularly for KTM. Policymakers can introduce incentive programs and awareness campaigns to encourage sustainable travel, leveraging social influence through collaborations with influencers, community leaders, and educational institutions. Additionally, tourism organisations should design campaigns that align with Generation

Z's values, environmental responsibility, and convenience, while utilising digital platforms for maximum engagement.

Despite its contributions, the study has limitations, including reliance on self-reported data, a limited sample size of 219 respondents, and a narrow focus on Generation Z tourists in Kuala Lumpur, which may limit generalizability. Furthermore, the study did not explore external barriers such as cost or infrastructure challenges. Future research could address these gaps by incorporating a broader demographic and additional influencing factors. Overall, this study provides meaningful insights into Generation Z's travel behaviour, reinforcing the role of attitudes and social influence in green transportation adoption and offering a foundation for future research and policy development.

REFERENCES

- Abdul Hamid, N., Sulaiman, S., & Hassan, M. (2021). Public transportation and urban mobility: A case study of Kuala Lumpur. *Journal of Transport and Development*, 8(2), 45–57.
- Ajzen, I., & Fishbein, M. (1975). *Belief, attitude, intention and behavior: An introduction to theory and research*. Addison-Wesley.
- Altsybeeveva, O., Petrova, N., & Smirnov, A. (2023). Youth preferences for sustainable transport: The case of Eastern Europe. *Sustainability*, 15(12), 9852. <https://doi.org/10.3390/su15129852>
- Bannach, J., Müller, K., & Hoffmann, L. (2024). The role of subjective norms in adolescent sustainable travel choices. *Journal of Environmental Psychology*, 90, 102169. <https://doi.org/10.1016/j.jenvp.2023.102169>
- Cheng, L., & Cheng, Y. (2024). Family influence and low-carbon travel adoption. *International Journal of Sustainable Transportation*, 18(4), 332–344.
- Deden Irawan, H., Putri, D., & Santoso, A. (2024). Barriers to public transportation adoption among Generation Z. *Journal of Tourism and Mobility Studies*, 12(1), 56–70.
- Dev, R. (2024). Quantitative research in tourism behavior studies. *Tourism Methodology Review*, 6(1), 22–34.
- Farliana, R., Nugraha, B., & Fitriani, A. (2024). Attitudes and sustainable travel behavior among youth tourists. *Journal of Sustainable Tourism Research*, 15(1), 99–115.
- Francois, P. (2022). Data collection strategies in social science. *International Journal of Research Methods*, 4(3), 112–129.
- Fuelberth, M. (2023). Green transport strategies for sustainable urban tourism. *Journal of Green Mobility*, 5(2), 77–91.
- Gharibi, S., Azizi, R., & Moradi, P. (2024). Public transportation challenges in sustainable mobility adoption. *Urban Transport Journal*, 14(3), 214–229.

- Giubergia, F., Casal, J., & Rossi, M. (2024). Subjective norms and public transportation behavior: Evidence from Argentina. *Journal of Environmental Behavior Studies*, 19(2), 201–215.
- Hamim, H. A., & Jalil, R. (2024). Environmentally friendly transportation in Malaysia: Trends and challenges. *Malaysian Journal of Sustainable Development*, 9(1), 33–48.
- Imelda, N., & Rofi'i, A. (2022). Cost, convenience, and sustainable transportation adoption. *Asian Journal of Tourism Studies*, 11(4), 250–266.
- Khajehshahkoohi, A., Hosseini, A., & Rahimi, H. (2021). Environmental campaigns and social influences in public transport adoption. *Sustainability*, 13(21), 11563. <https://doi.org/10.3390/su132111563>
- Kwak, H. (2023). Regression analysis in behavioral transportation research. *Statistical Approaches in Tourism Studies*, 7(2), 58–73.
- La Barbera, F., & Ajzen, I. (2021). Control interactions in the theory of planned behavior: Rethinking perceived behavioral control. *Current Psychology*, 40, 628–644. <https://doi.org/10.1007/s12144-018-0020-8>
- Leal Filho, W., Azeiteiro, U., & Salvia, A. L. (2022). Climate change and tourism sustainability: A systematic review. *Sustainability*, 14(10), 5999. <https://doi.org/10.3390/su14105999>
- Li, H. (2022). Primary data in tourism behavior analysis. *Tourism Science Journal*, 18(3), 145–156.
- Li, J., Yang, H., & Sun, W. (2021). Policy and public campaigns for green mobility. *Journal of Policy Research in Tourism, Leisure and Events*, 13(1), 1–15. <https://doi.org/10.1080/19407963.2020.1839027>
- Li, S., Zhou, J., & Wang, Y. (2024). Accessibility and green transport adoption. *Journal of Transport and Sustainability*, 16(2), 65–82.
- Listiawati, R., Fitriana, N., & Arifin, H. (2024). Social norms and tourist adoption of green transport. *Tourism Research Review*, 12(1), 31–47.

- Mohammad, A., Zulkifli, N., & Rahman, S. (2024). Factors influencing adoption of green transport in Southeast Asia. *Asian Journal of Transportation Research*, 22(2), 118–130.
- Nogueira, J., Silva, C., & Costa, P. (2023). Attitudes and infrastructure in sustainable travel adoption. *International Journal of Sustainable Transportation*, 17(8), 765–780.
- Nordin, R., Shukor, A., & Ismail, Z. (2022). Smart ticketing and electric buses in Malaysia. *Journal of Urban Technology*, 29(5), 101–115. <https://doi.org/10.1080/10630732.2021.1945403>
- Nurul Yulia Hidayati, & Rizka Destiana. (2023). Attitudes and eco-friendly transportation among Indonesian youth. *Journal of Environmental and Tourism Studies*, 14(2), 99–115.
- Pandit, H., & Anish Kumar Sharma. (2023). Tourism emissions and climate change implications. *Journal of Environmental Management and Tourism*, 14(3), 587–599.
- Pellegrini, G., & Tagliabue, S. (2024). Environmental awareness and sustainable transport behavior. *Sustainability*, 16(4), 1980. <https://doi.org/10.3390/su16041980>
- Piras, F., Moretti, F., & Rizzo, G. (2021). Injunctive norms and sustainable transport intentions. *Sustainability*, 13(17), 9724. <https://doi.org/10.3390/su13179724>
- Plugge, M., & Nikou, S. (2024). Quantitative methods in transportation adoption research. *Journal of Quantitative Tourism Studies*, 9(1), 12–28.
- Proessdorf, S., Richter, F., & Klein, J. (2023). Flexibility of primary data in tourism research. *Tourism Methodology and Practice*, 21(3), 211–229.
- Razali, A., Rahim, N., & Hassan, M. (2021). Attitudes toward sustainable transport and adoption. *Journal of Sustainable Development Studies*, 9(4), 144–160.
- Rosalina, P., Tan, Y., & Low, C. (2023). Air travel and tourism's carbon footprint. *Journal of Travel and Sustainability*, 14(2), 65–78.
- Santi, A., Gunawan, T., & Putra, I. (2024). Generation Z and eco-conscious consumption. *Sustainability in Youth Studies*, 7(2), 144–160.
- Shetty, V., & Rizwana, M. (2024). Personality traits and adoption of green transport.

International Journal of Sustainable Tourism, 19(1), 45–60.

Sogbe, K., Mensah, A., & Boateng, D. (2024). Convenience as a determinant in green transportation. *Journal of Public Transport Studies*, 12(1), 102–119.

Wildan Fadhila, R., & Pangestu, D. (2024). Experiential benefits and adoption of green transportation. *Tourism Experience Journal*, 10(1), 55–69.

Xiayahu, L. (2023). Primary data use in transport research. *Asian Journal of Tourism Research*, 15(3), 188–200.

Yang, Z., Li, J., & Huang, Y. (2023). Theory of Planned Behavior in sustainable transport research. *Journal of Behavioural Transportation*, 15(4), 231–247.

Zhang, L., Wang, S., & Zhou, X. (2021). Attitudes toward public transit adoption. *Transportation Research Part A: Policy and Practice*, 148, 365–379. <https://doi.org/10.1016/j.tra.2021.04.012>

Ziesemer, F., Hofmann, E., & Mäder, M. (2021). Peer influence and sustainable transportation choices. *Journal of Environmental Psychology*, 77, 101685. <https://doi.org/10.1016/j.jenvp.2021.101685>